

25 FEB 2005

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
11 March 2004 (11.03.2004)

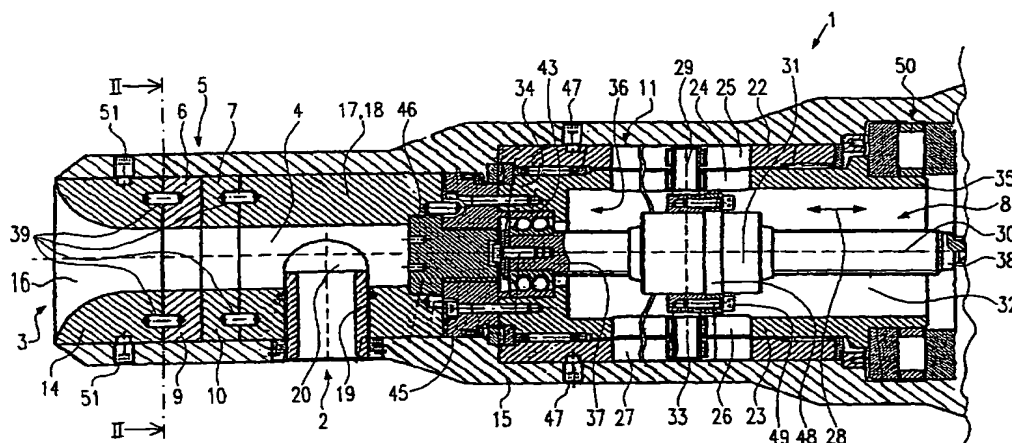
PCT

(10) International Publication Number  
**WO 2004/020784 A2**

- (51) International Patent Classification<sup>7</sup>: **E21B 34/02**, 34/04, 34/06, F16F 9/34
- (21) International Application Number: **PCT/EP2003/009698**
- (22) International Filing Date: 1 September 2003 (01.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 202 13 365.6 30 August 2002 (30.08.2002) DE
- (71) Applicant (for all designated States except US): **COOPER CAMERON CORPORATION** [US/US]; 1333 West Loop South, Suite 1700, Houston, TX 77027-9109 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **BIESTER, Klaus** [DE/DE]; Am Maschsee 2, 29342 Wienhausen (DE).
- (74) Agent: **HILGERS, Hans**; Grünecker, Kinkeldey, Stockmair & Schwanhäusser, Maximilianstrasse 58, 80538 München (DE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: **THROTTLE DEVICE**



(57) **Abstract:** A throttle device (1) comprises a device housing (15) with an inlet (2) and an outlet (3) and a throttle element (5) arranged in a connecting duct (4) connecting the inlet (2) and the outlet (3), said throttle element comprising at least two throttle components (6, 7) to be adjusted relative to one another and by the relative position of which an opening surface of the throttle element (5) is determined, at least the first throttle component (6) being actively connected with a drive means (8) for an adjustment relative to the second throttle component (7). In order to guarantee with a simplified construction a safe operation of the throttle device without the risk of a choking of the corresponding throttle element and to simultaneously realize a simple possibility of movement for the throttle components, the throttle components are throttling discs to be rotated relative to one to another, at least one of which being movably connected with a rotary adjustment device (11) of the drive means (8), the throttling discs (9, 10) each comprising at least one throttle opening (12, 13, 40, 41) the overlap of which determines the opening surface depending on the relative position of the throttling discs (9, 10).

BEST AVAILABLE COPY

WO 2004/020784 A2



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*